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EXAMINER	
CANELLA, KAREN A	
ART UNIT	PAPER NUMBER
1642	16

DATE MAILED: 07/31/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/724,254	DALLA-FAVERA, RICCARDO	
	Examiner	Art Unit	
	Karen A Canella	1642	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) *1-25 and 33-47* is/are pending in the application.

4a) Of the above claim(s) *1-25 and 32-42* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *43-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Acknowledgment is made of applicant's election with traverse of Group III, drawn to antibodies which bind to the proteins of Group II Acknowledgment is also made of applicants election of the species of IRTA2. the traversal is on the grounds that the restriction is improper because the inventions of Groups I-III and the species of IRTA1, 2,3, 4 and 5 are not independent. Applicant cites the M.P.E.P. (802.01) for a definition of "independent" meaning that "there is no disclosed relationship between the subject matter claimed". This has been considered but not found persuasive. Section 802.01 of the MPEP also states that the term "distinct" means that two or more subjects as disclosed are related, for example, as combination and part (subcombination) thereof, process and apparatus for its practice, process and product made, etc., but are capable of separate manufacture, use, or sale as claimed, AND ARE PATENTABLE (novel and unobvious) OVER EACH OTHER (though they may each be unpatentable because of the prior art). It will be noted that in this definition the term related is used as an alternative for dependent in referring to subjects other than independent subjects. Section 802.02 Defines restriction as a practice of requiring an election between distinct inventions, for example, election between combination and subcombination inventions, and the practice relating to an election between independent inventions, for example, an election of species, and states that under the statute an application may properly be required to be restricted to one of two or more claimed inventions only if they are able to support separate patents and they are either independent (MPEP § 806.04 - § 806.04(i)) or distinct (MPEP § 806.05 - §806.05(i)). Thus, it is not required that the inventions be independent. The restriction requirement of Paper No. 11 set forth the following:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-25, drawn to isolated nucleic acids encoding IRTA1, IRTA2, IRTA3, IRTA4, and IRTA5, vectors and host cells thereof, classified in class 536, subclass 23.5 and class 435, subclasses 252.3, 320.1, 325, 348, and 419.

II. Claims 33-42, drawn to the purified proteins of IRTA1, IRTA2, IRTA3, IRTA4 and IRTA5, classified in class 530, subclass 350.

III. Claims 43-47, drawn to antibodies which bind to the proteins of Group II, classified in class 530, subclass 387.1, 387.3, 388.1 and class 181.1 and 183.1.

The inventions are distinct, each from the other because of the following reasons:

Inventions of Groups I, II and III are structurally and functionally different products which are made by different methods and have different uses. The examination of all groups would require different searches in the U.S. Patent Shoes and the scientific literature and would require the consideration of different patentability issues.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification and recognized divergent subject matter and because the searches required for the groups are not co-extensive, restriction for examination purposes as indicated is proper.

It is noted that the inventions were specifically set forth as being distinct from one another rather than independent, and fulfill the requirement of the M.P.E.P. regarding separation of distinct inventions.

Applicant argues that species of IRTA1-5 are not independent, but does not provide reasoning to support this allegation. Given that each of the IRTA proteins can be characterized by an amino acid sequence without need for reference to another IRTA species, the examiner concludes that IRTA1-5 are indeed independent. Because the species of IRTA proteins are a result of a immunoglobulin receptor translocation associated event, the examiner, in the interest of customer service, required an election of species, rather then separating each defined protein, antibody which binds to said protein and nucleic acids which encodes said protein as separate restriction groups. It is further noted that upon indication of allowable subject matter, applicant is entitled to examination of another species of nucleic acid encoding IRTA.

Applicant argues that it would not be undue burden to examine all the inventions and species of the instant invention once the prior art of Group I has been identified. This has been considered but not found persuasive. Firstly, resource at the PTO are such that the allocation of computer search time for nucleic acids is generally limited to one nucleic acid per application. Secondly, as to the question of burden of search, the claims of Groups I, II and III are classified differently, necessitating different searches in the U.S. Patent shoes. Further, classification of subject matter is merely one indication of the burdensome nature of the search involved. The literature search, particularly relevant in this art, is not co-extensive and is much more important

in evaluating the burden of search. Clearly different searches and issues are involved in the examination of each group.

For these reasons the restriction requirement is deemed to be proper and is adhered to. The requirement is therefore made FINAL.

2. Claims 1-25, 33-47 are pending. Claims 1-25 and 32-42, drawn to non-elected inventions, are withdrawn from consideration. Claims 43-47 are examined on the merits.

Priority

3. Applicant is claiming priority to provisional application 60/168,151. The title of said provisional application is "Isolation of Two Novel Genes Coding for New Fc Receptor-Type Molecules Involved in the Pathogenesis of Lymphoma/Myeloma" . Upon examination of said provisional application it is noted that the MUM-2 gene and the protein encoded therefrom is described on page 1, line 26 to page 2 line 2. The MUM-3 gene is only mentioned by name and no description of said gene or protein is made in the provisional. Further, it is deduced that neither MUM-2 nor MUM-3 is related to the instant IRTA2 by nucleic acid or amino acid sequence because the instant non-provisional application describes MUM-1 and 3 in Figures 5 and 6 as separate genes encoding separate proteins from that of the instant IRTA-2 described in figure 9. Thus, provisional application '151 does not provide priority for the instant invention. Accordingly, the priority date will be the instant filing date of November 28, 2000.

Specification

4. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (page 21, line 11). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Oath/Declaration

5. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It recited priority to the provisional application of 60/168,151 which is incorrect as the provisional application does not disclose the instant invention for the reason set forth under "Priority" above.

Claim Objections

6. Claim 45 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 45 embodies the antibody of claim 43 wherein the antibody is a monoclonal or a polyclonal antibody. As Monoclonal or polyclonal are the only alternatives for an antibody, claim 45 has the same scope as claim 43 and therefore fails to further limit claim 43.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 43-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 43-47 are rendered vague and indefinite by the recitation of IRTA2 as the only means of identifying the protein to which the claimed antibodies bind. IRTA2 is a laboratory designation coined by the inventor and unknown at the time of filing.

The recitation of "monoclonal" in claim 46 lacks antecedent basis in claim 43.

The recitation of toxoid in claim 47 renders the claim vague and indefnitie as the specification does not provide a definition for a toxoid that would differentiate it from a toxin.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 43-47 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 43-47 are drawn to antibodies which are directed to the IRTA2 protein. The specification describes the IRTA proteins as belonging to the immunoglobulin superfamily receptor translocation associated genes which are differentially targeted by 1q21 abnormalities (page 4, line 32 to page 5, line 7). The specification provides a description to three isoforms of IRTA2 (a, b and c) resulting form alternate splicing (figure 18B) and set forth as SEQ ID NO: 44, 3 and 41, respectively . The specification concludes that the IRTA family may represent an intersection among the Fc, IRS and Cam families, combining features from all three. When given the broadest reasonable interpretation, the claims are dependent upon a genus of proteins which belong to the immunoglobulin receptor superfamily and are deregulated as a result of a 1q21 abnormality. The genus of proteins is highly varied as structural attributes which define the proteins of the genus are missing from the claims. SEQ ID NO: 44, 3 and 41 fail to describe this genus, because the genus encompasses proteins having varied structural attributes. One of skill in the art would conclude that applicant did not disclose a representative number of species of the protein genus and therefore was not in possession of the antibodies which bound to the proteins of the genus.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by the abstract of Medesan et al (Revue Roumaine de Biochimie, 1979, Vol. 16, pp. 31-47).

Claim 43 is drawn to an antibody directed to a purified IRTA2 protein. Claim 44 specifies that the protein is a human IRTA2 protein. Claim 45 embodies the antibody of claim 43 wherein the antibody is a monoclonal or polyclonal antibody..

The specification teaches that IRTA2c which is a human protein can specifically bind heat aggregated human serum IgG (page 80, lines 13-14). Medesan et al disclose heat aggregated human IgG, thus fulfilling the specific embodiments of the claims.

10. Claims 43-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Zipf et al (Journal of Immunology, 1983, Vol. 131, pp. 3064-3072) as evidenced by the abstract of Callanan et al (Blood, 1998, Vol. 92, No. 10, suppl 1, page 2445) and Macardle et al (European Journal of Immunology, 2002, Vol. 32, pp. 3736-3744).. The specific embodiments of claims 43-45 are recited above. It is noted that the instant claims are rejected under 112, because the metes and bounds of the constitution of an IRTA2 protein could not be determined.

Zipf et al disclose a monoclonal antibody of 41H.16. Macardle et al disclose that the 41H16 antibody is an anti-CD32 antibody binding to FcgammRIIb (page 3737, second column, first sentence under the heading of section 2.1). The abstract of Callahan et al discloses that a cell line derived from a patient having follicular lymphoma exhibiting overexpression of FcgammaRIIb2 and that this cell line had a 1q21 translocation (t(1;22)(q21;q11)). The specification states on page 71, lines 5-23, that IRTA2 mRNA expression is highest in centrocytes and post-germinal center B cells, consistent with detection of mRNA for IRTA2 in intraepithelial and intrafollicular regions of the tonsils. The specification states on page 74, lines 26-27, that IRTA2 expression is frequently deregulated in cell lines carrying 1q21 abnormalities. One of skill in the art would conclude that the FcgammaRIIb has the same characteristics as that disclosed for the IRTA2, as both proteins are immunoglobulin receptors, and both proteins are deregulated as a result of a 1q21 abnormality. Thus the anti CD32 antibody fulfills the specific embodiments of the claims .

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schlom ("Monoclonal Antibodies :They're More and Less Than You Think", In: Foundations of Oncology, 1991, Broader, Ed., pp. 95-134) in view of Zipf et al (Journal of Immunology, 1983, Vol. 131, pp. 3064-3072) and the abstract of Callanan et al (Blood, 1998, Vol. 92, No. 10, suppl 1, page 2445) and Macardle et al (European Journal of Immunology, 2002, Vol. 32, pp. 3736-3744) and Latour et al (Journal of Immunology, 1996, Vol. 157, pp. 189-197). The specific embodiments of claims 43-46 and the teachings of Zipf et al and the abstract of Callahan et al and Macardle et al with regard to the disclose of said embodiments s are set forth above.

Claim 47 is drawn to the antibody of claim 43 wherein the antibody is conjugate to a therapeutic agent, wherein the therapeutic agent is selected from the group consisting of a radioisotope, a toxin, a toxoid or a chemotherapeutic agent..

Schlom teaches anti-tumor antibodies conjugated to drugs, toxins and radionuclide for enhancement of targeting said drugs, toxins and radionuclide to tumors. (pages 107-109) Schlom teaches that in order to be useful, said conjugates must be internalized for cytotoxic activity to occur (page 107, second column, lines 5-10 under the heading "Drug and Toxin mAb Conjugates"). Schlom does not specifically teach an antibody directed to FcgammIIb2.

Latour et al teach that antibodies which bind to FcgammaRIIb2 are internalized versus antibodies which bind to FcgammaRIIb1, which are not internalized (page 192, first column, lines 11-17, under the heading "Biologic activities of 32-kDa FcgRIIB").

The combination of Zipf et al, the abstract of Callahan et al nor Macardle et al teach the anti CD32 antibody which binds to the FcgammaRIIb2 and the overexpression of FcgammaIIb2 in a cell line derived from a lymphoma patient having a 1q21 abnormality.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the claimed invention was made to conjugate the anti-Cd32B antibody to a drug, toxin or radionuclide as taught by Schlom.

One of ordinary skill in the art would have been motivated to do so with a reasonable expectation of success by the teachings of Zipf et al, the abstract of Callahan et al and Macardle, which render obvious the anti-Cd32B antibody for targeting FcgammaRIIb2 on a lymphoma cell having a 1q21 abnormality., and the teachings of Latour et al on the endocytosis of antibodies via FcgammaRIIb2, and the teachings of Schlom et al which necessitate that the conjugated antibody be internalized in order for the drug, toxin or radionuclide to have a significant effect on the targeted tumor cell.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karen Canella whose telephone number is (703) 308-8362. The examiner can normally be reached on Monday through Friday from 8:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Caputa, can be reached on (703) 308-3995. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Karen A. Canella

Karen A. Canella, Ph.D.
Patent Examiner, Group 1642
July 28, 2003